AIC-320
Supplement 2

Eastern Regional Research Laboratory
Philadelphia 18, Pennsylvania

PUBLICATIONS AND PATENTS

OF THE

EASTERN REGIONAL RESEARCH LABORATORY

January - June 1952

Single copies of available reprints may be obtained on request. At the time this list was prepared, the following were not available:

No. 629, No. 650

Photostat copies of publications usually can be purchased at nominal cost through the Bibliofilm Service of the Library of the U. S. Department of Agriculture, Washington 25, D. C.

Publications and patents of the Eastern Regional Research Laboratory issued before 1951 are listed in AIC-180 and Supplements 1 to 6.

This supplement includes an index which covers AIC-180 and Supplements 1 through 6, and AIC-320 and Supplements 1 and 2.

BUREAU OF AGRICULTURAL AND INDUSTRIAL CHEMISTRY
AGRICULTURAL RESEARCH ADMINISTRATION
UNITED STATES DEPARTMENT OF AGRICULTURE

Publications

616. Beinhart, E. G. (ERRL), and Morgan, O.D. (University of Maryland)
PRELIMINARY STUDY OF STERILIZING TOBACCO STEMS AGAINST MOSAIC DISEASES. AIC-334, April 1952. (Processed.)
Tobacco stems may be sterilized against mosaic disease by bringing them to 32 percent moisture and exposing them to 212° F. for 15 minutes.

617 Borasky, R., and Rogers, J. S.
EFFECTS OF TANNERY PROCESSES ON THE ELECTRONOSCOPIC APPEARANCE OF BOVINE HIDE COLLAGEN FIBRILS. Journal of the American Leather Chemists Association, vol. 47, p. 312-329, May 1952.
Effects of pretreating and tanning agents on the appearance of collagen fibrils in the electron microscope are illustrated and discussed.

618 Buch, M. L., Montgomery, Rex, and Porter, W. L.
IDENTIFICATION OF ORGANIC ACIDS ON PAPER CHROMATOGRAMS. Analytical Chemistry, vol. 24, p. 489-491, March 1952.
A method was developed for differentiating certain organic acids that cannot be properly resolved by paper chromatography. It utilizes certain reagents, namely, silver nitrate-ammonium hydroxide, acetic anhydride-pyridine, ammonium vanadate, and ceric ammonium nitrate, to produce colors which when viewed in daylight and under ultraviolet light increase the possibility of identifying unknown acids.

619 Couch, J. F., Naghski, J., and Krewson, C. F.
RUTIN CONTENT OF *SOPHORA JAPONICA* L. Journal of the American Chemical Society, vol. 74, p. 424-425, January 20, 1952.
Unopened flower buds of the Chinese Scholar tree are used for medicinal purposes in China under the name "Wai Fa," the "blossom of the tree." This material contains 4 to 5 times as much rutin as does buckwheat, our best domestic source of the glycoside. Specimens were collected from a tree near this Laboratory throughout the growing season. As the buds opened into flowers, the rutin content declined, and continued to decrease as the seed pods formed. When the seeds were in the soft green stage, the seed pods contained no rutin. Rutin in small quantities was isolated from the leaflets of the tree.

620 Edwards, Paul W., Hoersch, A., Jr., Redfield, C. S., and Eskew, Roderick K.
DRYING POTATOES FOR FEED IN A DIRECT-FIRED, ROTARY DRIER. ECONOMIC FEASIBILITY OF THE PROCESS. American Potato Journal, vol. 29, p. 103-112, May 1952.
A process is described for drying potatoes for feed in a direct-fired, rotary alfalfa-type drier. A plant processing 62 tons of potatoes daily would require a fixed capital investment of about $92,500. It would produce 13.8 tons of feed, at a cost of about $30 per ton. This estimate is based on drying potatoes 210 days each year, and includes all costs except that of the potatoes, sales expense, and income tax.

621 Eskew, Roderick K.
7-FOLD CONCENTRATE. Chemurgic Digest, vol. 11, p. 24, May 1952.
The merits of 7-fold apple and grape juice concentrates as compared with those of 4-fold frozen concentrates are discussed, with particular reference to the value to the Armed Services of the more concentrated products.

622 Filachione, E. M.
LACTIC ACID. Encyclopedia of Chemical Technology, vol. 8, p. 167-180, 1952. This paper is primarily concerned with the industrial and chemical aspects of the commercially available lactic acid, which is the racemic modification. The following aspects of lactic acid are discussed: History, occurrence, physical properties and structure, chemical properties, methods of manufacture, purification, economic aspects, analysis, uses, and derivatives.

623 Griffin, Edward L., Jr., Phillips, G. W. Macpherson, Claffey, Joseph B., Skalamera, John J., and Strolle, E. O.
NICOTINE SULFATE FROM *NICOTIANA RUSTICA*. Industrial and Engineering Chemistry, vol. 44, p. 274-279, February 1952.
A new process was developed for recovery of nicotine from *Nicotiana rustica*. It consists in expressing the juice, which contains most of the nicotine, liming, clarifying, recovering the nicotine from the juice by liquid-liquid extraction with kerosene in a packed column, and finally contacting the kerosene extract with sulfuric acid to produce nicotine sulfate of commercial strength (40 percent nicotine). Process variables were studied on a pilot-plant scale. The equipment used is described in detail.

624 Heisler, E. G., Treadway, R. H., Osborne, Madelyn F., and McClennan, Marian L.
ENZYMIC HYDROLYSIS OF POTATOES. American Potato Journal, vol. 29, p. 37-48, February 1952.
A number of commercial amylases rapidly converted the starch in potatoes to sugars. One-half hour was sufficient to produce nearly the maximum amount of sugar at 55° C., with 1 percent enzyme present, based on the weight of the starch. Maltose was the principal sugar produced. Unknown oligosaccharides were produced in the hydrolyses, generally in greater amount than dextrose in the early phase. There was not much correlation between the alpha- and beta-amylase potencies of the commercial amylases and their performance in hydrolyzing potatoes under the conditions used.

625 Hipp, N. J., Groves, M. L., Custer, J. H., and McMeekin, T. L.
SEPARATION OF ALPHA, BETA AND GAMMA CASEIN. Journal of Dairy Science, vol. 35, p. 272-281, March 1952.
Two methods are described for separating the electrophoretic components of casein. In the first method, the separation is accomplished by precipitation from 50 percent alcohol solutions of casein by means of variations in temperature, pH, and ionic strength and by isoelectric precipitation from water. The second method is based on the solubility of the casein components in aqueous urea. The urea method is relatively simple, and gives products with the same composition and properties as those obtained by the pH and also the 50 percent alcohol methods.

626. Hoover, Sam R., Jasewicz, Lenore, Pepinsky, Janet B., and Porges, Nandor
ACTIVATED SLUDGE AS A SOURCE OF VITAMIN B_{12} FOR ANIMAL FEEDS. Sewage and Industrial Wastes, vol. 24, p. 38-44, January 1952.
Activated sludge produced by municipal sewage treatment plants contains significant amounts of vitamin B_{12}; the dried commercial fertilizer has a content of approximately 3.5 to 4 mg./kg. This amount is comparable with that required in commercial animal feed supplements (3.3 mg./kg.). A study of the distribution of this vitamin in activated sludge from municipal sewage-treatment plants indicated that part of it is derived from the raw sewage and part is synthesized by microbiological action in the aeration tanks. A number of possible extensions of this study are pointed out.

627 Hoover, Sam R., and Porges, Nandor
ASSIMILATION OF DAIRY WASTES BY ACTIVATED SLUDGE. II. THE EQUATION OF SYNTHESIS AND RATE OF OXYGEN UTILIZATION. Sewage and Industrial Wastes, vol. 24, p. 306-312, March 1952.
Chemical equations are established for conversion of lactose, casein, and skim milk solids to activated sludge. The various lines of evidence combine to give a quantitative description of the biochemical processes that occur in the oxidation of dairy waste by activated sludge.

628 Hoover, Sam R., and Porges, Nandor
TREATMENT OF DAIRY WASTE BY AERATION. AIC-332, March 1952. (Processed).
A review of the work on dairy waste disposal.

629 Knight, H. B., Jordan, E. F., Jr., Roe, Edward T., and Swern, Daniel
OLEIC ACID AND METHYL OLEATE. Biochemical Preparations, vol. 2, p. 100-104 (1952).
Large-scale laboratory procedures suitable for use in the preparation of pure oleic acid and methyl oleate are described.

630 Krewson, Charles F.
BUCKWHEAT LEAF MEAL FAT. II. COMPOSITION OF THE FATTY ACIDS. Journal of the American Oil Chemists' Society, vol. 29, p. 4-7, January 1952.
The composition of fatty acids of saponified buckwheat leaf meal fat was investigated. The chief organic acids found were: linolenic, oleic, linoleic, and palmitic. Smaller amounts of such acids as formic, lactic, stearic, arachidic, hexacosanoic, octacosanoic, acetic, lignoceric, and tricontanoic were found. About 18 percent of the original fat consists of red pigment and chlorophyll degradation compounds.

631 Krewson, Charles F., and Couch, James F.
PREPARATION OF WATER-SOLUBLE METAL COMPLEXES OF RUTIN AND RELATED FLAVONOLS. Journal of the American Pharmaceutical Association, Sci. Ed., vol. 41, p. 83-86, February 1952.
Because of the need for means of solubilizing rutin, a number of flavonoid meta complexes were prepared. In several of these, made from rutin in combination with iron compounds, the rutin appeared to combine with the iron compound in a stoichiometric relationship. Particularly effective in solubilization of rutin is colloidal saccharated iron oxide. Solutions of rutin in saccharated iron oxide may be varied over an appreciable concentration range; they are stable, pleasant to taste, and should be tolerated by intravenous injection, since solutions of saccharated iron oxide alone are well tolerated.

632 Krider, Merle M., and Wall, Monroe E.
STEROIDAL SAPOGENINS. V. ENZYMIC HYDROLYSIS OF STEROIDAL SAPONINS. Journal of the American Chemical Society, vol. 74, p. 3201, June 20, 1952. It was found that sapogenaceous plants belonging to the Agave and Yucca species have an enzyme system which cleaves the plant saponins to the steroidal sapogenin and component sugars or polysaccharides.

633 Mayer, E. L., Robertson, Carl, Nelson, R. H. (Bureau of Entomology and Plant Quarantine), and Woodward, C. F. (ERRL).
NICOTINE INSECTICIDES. PART VII. SEARCH FOR SYNERGISTS (3). E-836, March 1952. (Bureau of Entomology and Plant Quarantine "E" Series.) (Processed). A report of qualitative tests for synergism between nicotine and about 100 chemicals. Six of the chemicals were selected for quantitative study: isophthalonitrile, methylene-aminoacetonitrile, alpha-naphthonitrile, tall oil nitrile, 4,4'-dibromophenyl sulfide, and 4,4'-dichlorophenyl disulfide.

634 McMeekin, T. L.
MILK PROTEINS. Journal of Milk and Food Technology, vol. 15, p. 57-61, March-April 1952.
Some of the results obtained in this laboratory on the origin, separation, composition, and properties of the proteins of milk are reviewed.

635 Montgomery, Rex
ACIDIC CONSTITUENTS OF LACTIC ACID-WATER SYSTEMS. Journal of the American Chemical Society, vol. 74, p. 1466-1468. March 20, 1952.
A partition chromatographic procedure is described for estimating monomeric lactic acid, lactyllactic acid, lactyllactyllactic acid, and higher polymers in solutions of lactic acid and dehydrated lactic acid. The procedure is applied in a study of the composition of lactic acid-water systems.

636 Nichols, Peter L., Jr.
COORDINATION OF SILVER ION WITH METHYL ESTERS OF OLEIC AND ELAIDIC ACIDS. Journal of the American Chemical Society, vol. 74, p. 1091-1092, February 20, 1952.
The distribution of methyl oleate and methyl elaidate between isooctane and a solution of silver nitrate in aqueous methanol was measured. Coordination of silver ion with the cis-isomer was considerably greater, but only repeated extraction of isooctane-olefin solutions with silver nitrate could effect complete separation of the oleate and elaidate from a mixture. The possibility is envisioned of separating polyunsaturated fatty acid esters and of separating and classifying mixed glycerides with various degrees of unsaturation by an analogous process.

637 Nutting, G. C.
EFFECT OF ELECTROLYTES ON THE VISCOSITY OF POTATO STARCH PASTES. Journal of Colloid Science, vol. 7, no. 2, p. 128-139, April 1952.
Paste viscosity is reported for a commercial potato starch and several starches derived from this by cation exchange. Effects of pH and small concentrations of electrolyte on the viscosity are described. Correlation of viscosity and starch granule swelling is made through photomicrographs.

638 Ogg, C. L.
REPORT ON MICROANALYTICAL DETERMINATION OF SULFUR. Journal of the Association of Official Agricultural Chemists, vol. 35, p. 305-317, May 1952.
Reports results of the 1951 A.O.A.C. collaborative study of micromethods for the determination of sulfur in organic compounds.

639 Ogg, C. L., and Willits, C. O.
REPORT ON MICROANALYTICAL DETERMINATION OF NITROGEN. Journal of the Association of Official Agricultural Chemists, vol. 35, p. 288-291, May 1952.
Reports results of the 1951 A.O.A.C. collaborative study of the microdetermination of nitrogen by a modification of Friedrich's hydriodic acid pretreatment procedure.

640 Olson, R. L. (WRRL), and Treadway, R. H.
PRE-PEELED POTATOES FOR COMMERCIAL USE. AIC-246, Supplement 1, June 1952. (Processed.)
This supplement presents more recent information on the composition of baths used for dipping peeled potatoes.

641 Phillips, G. W. Macpherson, Eskew, Roderick K., Aceto, Nicholas C., and Skalamera, John J.
RECOVERY OF FRUIT ESSENCES IN PRESERVE MANUFACTURE. Food Technology, vol. 6, p. 210-213, June 1952.
A method is given for recovering, in essence form, the fruit aromas normally lost in the conventional vacuum-pan process of making jams and preserves. Equipment for carrying it out on a commercial scale is described. Results obtained with strawberry, cherry, peach, and blackberry preserves are presented.

642 Rehberg, C. E., and Dixon, Marion B.
DIESTERS OF LACTIC ACID. ESTERIFICATION OF LACTATES WITH DIBASIC ACIDS. Journal of the American Chemical Society, vol. 74, p. 707-709, February 5, 1952.
Twenty-six esters made by the esterification of lactate esters with dibasic acids are described. Boiling points, refractive indices, densities and viscosities of the esters at different temperatures are given. The potential usefulness of these compounds as plasticizers is suggested.

643 Rehberg, C. E., and Dixon, Marion B.
THE REACTION OF ACRYLONITRILE WITH ALKYL LACTATES. Journal of the American Chemical Society, vol. 74, p. 1035, February 20, 1952.
Methyl, ethyl, and butyl lactates were cyanoethylated with acrylonitrile to produce 1-carbalkoxyethyl 2'-cyanoethyl ethers. Isopropyl glycolate and N,N-dimethyllactamide failed to react with acrylonitrile under similar conditions.

644 Rehberg, C. E., and Dixon, Marion B.
ESTERS OF LACTYLLACTIC ACID. Journal of the American Chemical Society, vol. 74, p. 1609, March 20, 1952.
Thirteen lactyllactates are reported, with refractive indices, densities and viscosities at 20° and 40°, water solubilities at 25°, and boiling points at 0.1, 1.0, 10, 100, and 760 mm. pressure. Their use as intermediates in the preparation of plasticizers is suggested.

645 Riemenschneider, Roy W.
MEAT FATS FOR FRYING POTATO CHIPS. Potato Chipper, vol. 11, no. 11, p. 42-46, June 1952.
Results of recent investigations on the use of antioxidants in meat fats and blends of meat fats and vegetable fats for drying potato chips are summarized.

646 Roe, Edward T., Stutzman, Jeanne M., Scanlan, John T., and Swern, Daniel
FATTY ACID AMIDES. IV. REACTION OF FATS WITH AMMONIA AND AMINES. Journal of the American Oil Chemists' Society, vol. 29, p. 18-22, January 1952.
Conditions were worked out for the quantitative conversion of oleo oil, olive oil, castor oil, and tobacco seed oil to amides and glycerol by reaction with liquid ammonia under pressure. Similarly, methyl oleate was converted to oleamide in excellent yield. N-(2-hydroxyethyl)- and N-(n-dodecyl) amides were also prepared by the reaction of oleo oil with monoethanolamine and n-dodecylamine, respectively, at atmospheric pressure. Crystallization of the amides obtained from the various fats yielded oleamide (purity, 92 percent) from olive oil, ricinoleamide (purity, > 95 percent) from castor oil, and N-(2-hydroxyethyl) oleamide (purity, 90 percent) from oleo oil.

647 Schwartz, J. H., Brown, C. A., and Talley, E. A.
ALLYL STARCH ESTERS. AIC-339, June 1952. (Processed)
Discusses the preparation of allyl starch acetate, propionate, laurate, stearate, oleate, linoleate, allyl carbonate, benzoate and phenyl carbamate, and reports tests on films of these ether-esters to determine resistance to acetone, dilute aqueous solutions of alcohol, phenol, and acetic acid, and dilute aqueous alkalies. The resistance of these films is compared with that of films made from allyl starch and various allyl starch ethers.

648 Smith, Loren B., and Johnson, John A. (Kansas Agricultural Experiment Station)
THE USE OF HONEY IN BREAD PRODUCTS. The Bakers Digest, vol. 25, no. 6, p. 103-106, December, 1951. Honey -- Its Use in Bread Production. The American Baker, vol. 246, no. 14, p. 34, 37-38, October 1951. (Work done under BMA contract with Kansas Agricultural Experiment Station, supervised by ERRL).
Pilot-plant investigations on the use of honey in production of white bread, whole-wheat bread, and rolls have been carried out to determine the effect of the natural variability of honey on the baked product and production schedules. Using 15 of the most important commercial types of honey, the authors found that color and flavor are the only variables that require attention. Based on the results, a set of specifications is suggested for honey to be used in these products, for the guidance of both buyer and seller.

649 Stirton, A. J., Weil, J. K., Stawitzke, Anna A., and James, S.
SYNTHETIC DETERGENTS FROM ANIMAL FATS. DISODIUM ALPHA-SULFOPALMITATE AND SODIUM OLEYL SULFATE. Journal of the American Oil Chemists' Society, vol. 29, p. 198-201, May 1952.
Disodium alpha-sulfopalmitate prepared by the sulfonation of palmitic acid with liquid sulfur trioxide is potentially inexpensive, has adequate surface active properties, is a good detergent in hard and soft water, but has limited solubility at room temperature (0.25 percent at 25° C.). Sodium oleyl sulfate prepared by sulfation of oleyl alcohol with pyridine-sulfur trioxide has excellent solubility and surface active properties and is an excellent detergent in soft water. In hard water it is not so efficient, although it forms no insoluble calcium salts. The future of these compounds will depend on successful formulation with builders or combinations with soap or other detergents.

650 Swern, Daniel, and Jordan, E. F., Jr.
METHYL RICINOLEATE. Biochemical Preparations, vol. 2, p. 104-105 (1952).
A large-scale laboratory procedure suitable for use in preparing pure methyl ricinoleate is described.

651 Swern, Daniel, Knight, H. B., and Eddy, C. Roland
TRANS-OCTADECENOIC ACID CONTENT OF BEEF FAT. ISOLATION OF ELAIDIC ACID FROM OLEO OIL. Journal of the American Oil Chemists' Society, vol. 29, p. 44-46, February 1952.
Infrared spectrophotometric examination of three samples of freshly rendered edible beef fat, and edible oleo oil and oleo stearine obtained from one of them, revealed the presence of substantial quantities (5 to 10 percent) of trans materials believed to be mainly, if not exclusively, monounsaturated. It was concluded that the trans components are neither minor nor adventitious constituents, but important naturally occurring components which may contribute to any unique properties that beef fat may have. Trans-9-octadecenoic (elaidic) and vaccenic acids were isolated from oleo oil, the former apparently for the first time.

652 Swern, Daniel, and Port, William S.
POLYMERIZABLE DERIVATIVES OF LONG-CHAIN FATTY ACIDS. VI. PREPARATION AND APPLICABILITY OF UREA COMPLEXES OF VINYL ESTERS. Journal of the American Chemical Society, vol. 74, p. 1738-1739, April 5, 1952.
Vinyl esters of long-chain fatty acids, such as vinyl pelargonate, laurate, palmitate, and stearate, form urea complexes in good to excellent yield (56 to 99 percent). The technique of urea complex formation was used to separate vinyl pelargonate from cross-linking contaminants and to recover monomeric vinyl palmitate from mixtures containing monomer, polymer, inhibitor, and other unknown impurities.

653 Swern, Daniel, Witnauer, Lee P., and Knight, H. B.
CHEMISTRY OF EPOXY COMPOUNDS. XIII. UREA COMPLEX FORMATION IN DETERMINING THE CONFIGURATIONS OF THE 9,10-DIHYDROXYSTEARIC ACIDS. Journal of the American Chemical Society, vol. 74, p. 1655-1657, April 5, 1952.
It was shown that the hydroxyl groups in the high-melting isomer are on opposite sides of the chain, whereas in the low-melting isomer they are substantially on the same side. This information confirms the fact that hydroxylation with potassium permanganate proceeds by cis or normal addition and that opening of the oxirane ring of the isomeric 9,10-epoxystearic acids involves an inversion.

654 Talley, Eugene A., and Hunter, Ann S.
SOLUBILITY OF LACTOSE AND ITS HYDROLYTIC PRODUCTS. Journal of the American Chemical Society, vol. 74, p. 2789-2793, June 5, 1952.
The solubility in water at 25° C. of various mixtures of lactose, D-glucose, and D-galactose was determined. First-order, empirical equations were derived that express the solubility relationships of the three sugars.

655 Treadway, R. H.
USES OF POTATO STARCH AND POTATO FLOUR IN THE UNITED STATES. American Potato Journal, vol. 29, p. 79-84, April 1952.
Properties and methods of production of potato starch and potato flour are outlined. Production data are given, and the uses for each product are summarized.

656 Wells, P. A.
TEN YEARS' PROGRESS AT THE FOUR REGIONAL RESEARCH LABORATORIES. Chemurgic Digest, vol. 11, p. 11-17, April 1952.
Accomplishments of the four Regional Research Laboratories for the past 10 years are reviewed from the standpoint of (1) new or improved industrial products, (2) new or improved food products, (3) new or improved processing methods, (4) utilization of agricultural wastes, and (5) fundamental contributions to industry and science.

657 Whittenberger, R. T.
FACTORS WHICH AFFECT THE DRAINED WEIGHT AND OTHER CHARACTERISTICS OF HEAT-PROCESSED RED CHERRIES. Food Research, vol. 17, p. 299-306, May-June 1952.
Carefully picked red cherries were stored in air at 2° C. for 3 weeks, without spoilage. Their drained weight was increased by bruising the fresh cherries, by storing them for a short time at room temperature, and by treating them with calcium ions.

658 Willaman, J. J.
ALKALOIDS OF TOBACCO. IDENTIFICATION AND DETERMINATION. Industrial and Engineering Chemistry, vol. 44, p. 270-273, February 1952.
A review of the application to tobacco research of ultraviolet and infrared spectrophotometry, chromatography, countercurrent distribution, photochemical oxidation, reciprocal grafts with Nicotiana, radioactive tracers, statistical analysis, and improved pyrolysis, distillation, and colorimetric procedures.

659 Willits, C. O.
REPORT ON STANDARDIZATION OF MICROCHEMICAL METHODS. Journal of the Association of Official Agricultural Chemists, vol. 35, p. 287-288, May 1952.
Reports recommendations based on the 1951 A.O.A.C. collaborative study of micromethods for determination of sulfur, nitrogen, bromine, and chlorine in organic compounds.

660 Willits, C. O., and Ogg, C. L.
ORGANIC MICROCHEMISTRY. Analytical Chemistry, vol. 24, p. 70-76, January 1952.
A review of methods and apparatus applicable to organic microchemistry published during the past year.

661 Willits, C. O., Ricciuti, Constantine, Knight, H. B., and Swern, Daniel.
POLAROGRAPHIC STUDIES OF OXYGEN-CONTAINING ORGANIC COMPOUNDS. FUNCTIONAL GROUPS OF AUTOXIDATION PRODUCTS. Analytical Chemistry, vol. 24, p. 785-790, May 1952.
Describes the polarographic characteristics of a large variety of pure organic oxygen-containing compounds, suspected as products of autoxidation. The polarographic characteristics of these compounds will serve as an aid in the qualitative and quantitative analyses of autoxidation products.

662 Witnauer, L. P., and Scherr, H. J.
CYLINDRICAL LIGHT SCATTERING CELL. Review of Scientific Instruments, vol. 23, no. 2, p. 99-100, February 1952.
Construction and performance of a cylindrical cell permitting light-scattering measurements to angles as low as 22° to the incident beam are described. By extrapolating such measurements to zero angle, very high molecular weights may be determined without the assumption of a particular shape for the scattering particles.

663 Zittle, Charles A., and DellaMonica, Edward S.
USE OF BUTANOL IN THE PURIFICATION OF THE ALKALINE PHOSPHATASE OF BOVINE MILK. Archives of Biochemistry and Biophysics, vol. 35, p. 321-325, February 1952.
The alkaline phosphatase of bovine milk was purified more than 1,000-fold by dissociation of the phosphatase complex with n-butanol and subsequent fractionation with acetone.

664 Zittle, Charles A., and DellaMonica, Edward S.
EFFECT OF ALIPHATIC ALCOHOLS ON BOVINE ALKALINE PHOSPHATASES. Archives of Biochemistry and Biophysics, vol. 37, p. 419-424, June 1952.
Ethanol, methanol and isopropanol (5 to 20 percent) are inhibitory to bovine intestinal alkaline phosphatase at pH 9.7. The bovine milk phosphatase is not affected by alcohols at pH 9.7, but it is stimulated at higher pH values. Studies over a range of pH values and concentrations of ethanol and the substrate phenylphosphate suggest that the ethanol, by reducing the dielectric constant of the medium, influences the enzyme-substrate interaction. Apparently this interaction is determined by positively and negatively charged sites on the phosphatases. Differences in the degree of dissociation of these positive and negative groups could account for the different properties of the two phosphatases.

REVISIONS

'333 Anonymous
EASTERN REGIONAL RESEARCH LABORATORY AIC-227, March 1949; revised January 1952. (Processed.)
An information booklet containing a summary of the background, organization, research program and accomplishments of the Eastern Regional Research Laboratory.

1952

January - June

Patents

COPIES OF PATENTS MAY BE PURCHASED FROM

THE UNITED STATES PATENT OFFICE, WASHINGTON 25, D. C.

Ault, Waldo C., Nutting, George C , and Weil, James K.
ESTERS OF POLYHYDROXY-BENZOIC ACIDS AND METHOD FOR THEIR PREPARATION. U. S. Patent No. 2,595,221, issued May 6, 1952.

Cordon, Theone C., and Wickerham, Lynferd J.
PROCESS FOR THE PRODUCTION OF HIGH PURITY TANNING EXTRACTS. U. S. Patent No. 2,594,291, issued April 29, 1952.

Couch, James F., and Krewson, Charles F.
PURIFICATION OF RUTIN. U. S. Patent No. 2,587,600, issued March 4, 1952.

Fein, Martin L., and Fisher, Charles H.
ESTERS OF ACYLATED LACTIC ACID. U. S. Patent No. 2,590,852, issued April 1, 1952.

Filachione, Edward M., Fein, Martin L., and Fisher, Charles H.
MIXED GLYCEROL ESTERS AND THEIR ACYLATION PRODUCTS. U. S. Patent No. 2,584,998, issued February 12, 1952.

Fisher, Charles H., Filachione, Edward M., and Fein, M. L.
PRODUCTION OF ALPHA-CARBALKOXYALKYL METHACRYLATE . U. S. Patent No. 2,599,549, issued June 10, 1952.

Fisher, Charles H., Zief, Morris, and Hockett, Robert C.
MODIFIED DRYING OILS. U. S. Patent No. 2,594,303, issued April 29, 1952.

Heisler, Edward G., and Treadway, Robert H.
POTATO JUICE. U. S. Patent No. 2,594,308, issued April 29, 1952.

Mast, William C., and Fisher, Charles H.
PREPARATION OF GRANULAR POLYMERS. U. S. Patent No. 2,588,398, issued March 11, 1952

Mast, William C., Rehberg, Chessie E , and Fisher, Charles H.
VULCANIZATION OF ACRYLIC RESINS. U. S. Patent No. 2,600,414, issued June 17, 1952.

Port, William S., Jordan, Edmund F., Jr., and Swern, Daniel
SEPARATION OF VINYL ESTERS OF LONG CHAIN FATTY ACIDS FROM THE CORRESPONDING FREE FATTY ACIDS. U. S. Patent No. 2,586,860, issued February 26, 1952

Index to publications listed in AIC-180 and Supplements 1 through 6, and AIC-320 and Supplements 1 and 2 (1939 through June 1952). The numbers refer to the numbers of the publications in the lists; for those with an asterisk, reprints were not available at the time the index was prepared.

I. FRUITS AND VEGETABLES

A. Apples and other eastern fruits

1. Apple essence
   78*, 201, 250, 295, 322, 379*, 404*, 442, 478, 587
2. Apple juice
   24*, 26*, 43*, 251, 330, 339, 562, 563, 621
3. Apple sirup; apple butter
   37*, 79*, 81, 117*, 135, 246
4. Fruit essences (other than apple)
   368, 379*, 404*, 416, 469, 519, 587, 641
5. Fruit juices (other than apple); fruit spreads
   469, 507, 621
6. Pectin and derivatives; pectases
   40, 64, 125, 149, 150*, 179, 184, 187, 202, 219, 235, 340, 463, 468
7. Miscellaneous and general; research program
   14*, 166*, 167*, 214, 220, 252, 276, 502, 547, 573, 657

B. Potatoes

1. Allyl carbohydrates (other than allyl starch)
   84, 139, 158, 203, 255, 298, 598, 647
2. Allyl starch
   136, 137, 138, 197, 203, 237, 269, 439, 451, 613, 647
3. Feed
   304, 337, 561, 572, 620
4. Fermentation
   467, 600
5. Potato flour
   270, 304, 337, 400, 505, 561, 655
6. Potato starch and other carbohydrates
   77, 86, 313, 329, 347, 357, 359, 601, 637, 655
7. Starch and carbohydrate derivatives (other than allyl compounds)
   99, 100, 101, 157, 159, 208, 253, 286, 594, 595, 599, 614
8. Starch factory wastes
   305, 306
9. Miscellaneous and general
   137*, 264, 323, 359, 384, 401, 476, 509, 599, 600, 606, 624, 640

C. Vegetables (other than potatoes); vegetable wastes

1. Chemicals from vegetables
   41*, 61*, 107*, 189, 190, 266, 296, 331, 402, 403, 543
2. Feed
   54*, 105*, 119, 126, 261, 325, 331, 543, 544

3. Rutin
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4. Rutin analysis
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5. Miscellaneous and general
15*, 25*, 74, 80, 119, 189, 239, 296, 328, 331, 420, 425, 457, 576, 578, 630

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440, 443, 507, 515, 545, 584, 602, 605, 648

B. Hides, Tanning Materials and Leather
1. Alum retannage
2, 35, 36, 334, 570
2. Canaigre
95, 96, 216, 217, 259, 279, 372, 466, 515, 536, 537
3. Collagen
283, 364, 461, 466, 617
4. Microbiology
5, 62, 215, 227, 229, 296, 467, 478, 546
5. Sources of vegetable tannins (other than canaigre)
4, 19, 28, 29*, 38, 98, 118, 170, 180, 259, 278, 365, 394, 499, 557, 592
6. Miscellaneous and general
3*, 5, 10, 11, 12, 13, 20*, 21*, 22, 27*, 30, 31, 32*, 45*, 48, 49, 50, 51, 168, 181, 182, 209, 215, 229, 240, 247, 299, 364, 366, 553, 556

C. Maple products
411, 446, 447, 590, 607

D. Natural Rubber Investigations
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E. Sucrose
309, 407, 408, 452, 453, 454, 568, 614

F. Tobacco
1. Alkaloids
386, 658
2. Curing
82, 410
3. Insecticides based on nicotine
132, 200, 224, 225, 265, 292, 293, 345, 479, 542, 579, 580, 633
4. *Nicotiana rustica*
16*, 464, 623
5. Nicotinamide; nicotinic acid, nicotinonitrile, nicotinic anhydride
55, 56, 111, 112, 114, 128, 244, 245, 355

4. Casein fiber and plastics
   63, 129, 141, 178, 287, 311, 312, 317, 373, 418, 424, 581
5. Caseins
   109, 129, 160, 161, 221, 367, 374, 471, 473, 625
6. Derivatives
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7. Enzymes
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8. Molecular weights
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9. Photoxidation
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10. Protein fibers
    59, 85, 148, 204, 234, 581
11. Water absorption
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12. Miscellaneous and general
    169, 196, 294*, 308, 375*, 474, 548*, 567, 615, 634

D. Milk sugar and derivatives

1. Lactic acid
   a. Derivatives: acrylates; methacrylates
      44, 47*, 53, 57, 67, 70, 72, 87, 89, 90, 142, 143, 144, 177, 186, 206*, 230, 274, 318, 390, 391, 392, 414, 431, 496, 497, 569
   b. Derivatives: esters; polymers
      8*, 47*, 66, 68, 69, 88, 122, 176, 193, 205, 258, 272, 273, 285, 303, 307, 388, 389, 413, 433, 434, 435, 436, 489, 491, 492, 493, 494, 495, 520, 564, 565, 642, 643, 644
   c. Derivatives: nitrogen compounds
      257, 349, 390, 427, 430, 490, 535
   d. Miscellaneous and general
      46, 47*, 176, 275, 308, 450*, 470, 521, 535, 622, 635
2. Lactoprenes
   71, 75, 76, 130, 131, 192, 223, 241*, 281, 310, 314, 342, 343, 344, 388, 392, 518
3. Lactose
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A. Analysis

1. General organic
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3. Inorganic
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4. Kjeldahl
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7. Spectrophotometry
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B. General Laboratory Program
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